UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/691,879	10/18/2000	Scott D. Smyers	50N3544.01/1280	5421

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EXAMINER
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ART UNIT	PAPER NUMBER
2127	4

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Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/691,879	SMYERS ET AL.
	Examiner	Art Unit	
	Lilian Vo	2127	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _18 October 2000_.
2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1 - 62_ is/are pending in the application.
   4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) _1 - 62_ is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a) ☐ All   b) ☐ Some * c) ☐ None of:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. _____.
    3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _2, 3_.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1.   Claims 1 – 62 are pending.

Claim Rejections - 35 USC § 112

2.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3.   Claims 5 – 13, 15 - 18, 21 – 30, 35 – 43, 45 – 48, and 51 – 60 are rejected under 35

U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and

distinctly claim the subject matter which applicant regards as the invention.

4.   **Claims 5 – 13, 15 - 18, 21 – 30, 35 – 43, 45 – 48, and 51 – 60,** recite the terms

"plesiochronous process", "endochronous" and "exochronous", which are not defined by the

claims nor neither well defined by the specification. Applicants need to provide a more precise

definition for the terms.

Claim Rejections - 35 USC § 102

5.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this

subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6.   Claims 1 – 7, 9 – 12, 14, 19, 31 – 37, 39 - 42, 44, 49, 61 and 62 are rejected under 35

U.S.C. 102(e) as being anticipated by Gulick (US 6,625,743).

7.   Regarding **claim 1**, Gulick teaches an apparatus for implement a multi-level system

model, comprising:

        a picokernel configured to schedule and execute one or more selected processes in an

electronic device (abstract, col. 2, lines 1 – 8, 21 - 31); and

        a processor coupled to said electronic device for controlling said picokernel (col. 2, lines

21 – 31, figs. 1 – 5).

8.   Regarding **claim 2**, Gulick teaches the apparatus of claim 1, wherein said electronic

device is coupled to an electronic network that is implemented according to an IEEE 1394 serial

bus standard (col. 1, lines 42 – 47, col. 3, lines 50 - 54).

9.   Regarding **claim 3**, Gulick teaches the apparatus of claim 1, wherein said electronic

device is one of a consumer-electronics device, an audio-visual device, and a computer device

(abstract, col. 1, lines 15 – 25).

10.   Regarding **claim 4**, Gulick teaches the apparatus of claim 1, wherein said one or more

selected processes include at least one of transporting time-sensitive data and processing time-

sensitive data (col. 1, lines 15 – 42, col. 3, lines 50 – 62).

11.   Regarding **claim 5**, Gulick teaches the apparatus of claim 1, wherein said one or more

selected processes include at least one of an isochronous process and a plesiochronous process

(abstract, col. 1, lines 15 – 42, col. 3, lines 50 – 62, col. 4, lines 31 - 39).

12.   Regarding **claim 6**, Gulick teaches the apparatus of claim 5, wherein said at least one of

an isochronous process and a plesiochronous process are executed in a manner that is

synchronized with isochronous cycles that are each synchronized to an isochronous clock

(abstract, col. 1, lines 15 – 42, col. 3, lines 50 – 62, col. 4, lines 31 - 39).

13.   Regarding **claim 7**, the apparatus of claim 6, wherein said picokernel is repeatedly

triggered to schedule and execute said at least one of an isochronous process and a

plesiochronous process by a cycle start signal in a manner that is synchronized with said

isochronous cycles (abstract, figs. 6 and 7).

14.   Regarding **claim 9**, Gulick teaches the apparatus of claim 1 wherein said picokernel is

stored in a memory device that also includes at least one of device software, a cantaloupe

manager, one or more cantaloupes, one or more endochronous application program interfaces,

one or more isochronous process representations, and one or more plesiochronous process presentations (fig. 4, col. 6, lines 6, lines 1 – 46).

15. Regarding **claim 10**, Gulick teaches the apparatus of claim 9, wherein said picokernel includes at least one of isochronous scheduler, an isochronous process list, a plesiochronous scheduler, and a plesiochronous process list (abstract, col. 3, lines 50 – 63, col. 5, lines 1 – 14).

16. Regarding **claim 11**, Gulick teaches the apparatus of claim 9, wherein said one or more cantaloupes each includes one or more device resource identifiers that are each associated with a corresponding device resource usage value (col. 7, line 37 – col. 8, line 7, fig. 7).

17. Regarding **claim 12**, Gulick teaches the apparatus of claim 9, wherein said endochronous application program interfaces include at least one of means for installing isochronous services, means for creating and controlling endochronous processes, and means for communication through a signaling mechanism (col. 6, line 25 – col. 7, line 2).

18. Regarding **claim 14**, Gulick teaches the apparatus of claim 1, wherein device software performs an initial identification procedure that includes receiving notification information for a transfer or a processing of isochronous data (abstract, col. 6, lines 16 – 20).

19.   Regarding **claim 19**, Gulick teaches the apparatus of claim 1, wherein picokernel detects

a cycle start signal from an isochronous clock to signify the start of an isochronous cycle

(abstract, col. 2, lines 1 – 31, figs. 6, 7).

20.   **Claims 31 – 37, 39 - 42, 44, 49, 61 and 62** are rejected on the same ground as stated

above.

Claim Rejections - 35 USC § 103

21.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

22.   Claims 8, 13, 38 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Gulick (US 6,624,743) as applied to claim1 above, in view of Doi (US 5,815,504).

23.   Regarding **claim 8,** Gulick teaches of kernel includes an isochronous scheduler and

responsively invoking said isochronous scheduler in response to an isochronous cycle start signal

to thereby select, schedule, and execute active isochronous processes on said electronic device

(abstract, col. 4, lines 6 – 39, col. 6, line 16 – col. 7, line 2, and figs. 6 – 7).

Gulick however did not teach the additional limitation as claimed. Nevertheless, Doi teaches of identifying and processing the plesiochronous signal when it is received (abstract, col. 1, lines 37 – 66).

It would have been obvious for one of an ordinary skill in the art, at the time the invention was made, to combine Gulick and Doi's teachings so that the system is capable of processing a variety of different signals to enhance the system processing power.

24.   Regarding **claim 13**, Gulick teaches of isochronous process representations each includes one or more data structures that correspond to the process that has been instantiated on the electronic device, and the data structures including optimizing information for deterministically executing the process (abstract, col. 1, line 61 – col. 2, line 8, col. 4, lines 31 - 59).

Gulick however did not teach the additional limitation as claimed. Nevertheless, Doi teaches of identifying and processing the plesiochronous signal when it is received with a data structure that corresponds to the process which has been instantiated on the electronic device, and the data structures including optimizing information for deterministically executing the process (abstract, col. 1, lines 35 – 66, col. 3, lines 42 - 57).

It would have been obvious for one of an ordinary skill in the art, at the time the invention was made, to combine Gulick and Doi's teachings so that the system is capable of processing a variety of different signals to enhance the system processing power.

25.   **Claims 38 and 43** are rejected on the same ground as stated above.

26.   Claims 15 – 18, 20, 45 – 48 and 50 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Gulick (US 6,624,743) in view of Gulick (US 6,502,123, hereinafter D.

Gulick).

27.   Regarding **claim 15**, Gulick did not teach the additional limitation as claimed.

Nevertheless, D. Gulick teaches device software generates a request to the application program

interfaces for instantiating an isochronous process (abstract, col. 11, lines 41 – 56, fig. 6).

It would have been obvious for one of an ordinary skill in the art, at the time the

invention was made, to combine both references of Gulick so that isochronous tasks can be

executed more reliable in a general-purpose operating system (D. Gulick, abstract, col. 2, lines

35 – 36).

28.   Regarding **claim 16**, Gulick did not teach the additional limitation as claimed.

Nevertheless, D. Gulick teaches a resource manager analyzes one or more resource

characterizations to determine whether sufficient device resources are available for authorizing

said one or more endochronous application program interfaces to instantiate said isochronous

process on said electronic device (abstract, col. 7, lines 17 – 29, col. 8, lines 46 – 67, col. 11,

lines 41 – 56, fig. 6).

It would have been obvious for one of an ordinary skill in the art, at the time the invention was made, to combine both references of Gulick so that isochronous tasks can be executed more reliable in a general-purpose operating system (D. Gulick, abstract, col. 2, lines 35 – 36).

29. Regarding **claim 17**, Gulick did not teach the additional limitation as claimed. Nevertheless, D. Gulick teaches one or more endochronous application program interfaces instantiate said isochronous process on said electronic device when said sufficient device resources are available on said electronic device (abstract, col. 7, lines 17 – 29, col. 8, lines 46 – 67, col. 11, lines 41 – 56, fig. 6).

It would have been obvious for one of an ordinary skill in the art, at the time the invention was made, to combine both references of Gulick so that isochronous tasks can be executed more reliable in a general-purpose operating system (D. Gulick, abstract, col. 2, lines 35 – 36).

30. Regarding **claim 18**, Gulick did not teach the additional limitation as claimed. Nevertheless, D. Gulick teaches an operating system adds an isochronous process identifier to an isochronous process list when said isochronous process has been instantiated and is active on said electronic device (col. 5, lines 6 – 13, col. 6, lines 54 – 67).

It would have been obvious for one of an ordinary skill in the art, at the time the invention was made, to combine both references of Gulick so that isochronous tasks can be executed more reliable in a general-purpose operating system (D. Gulick, abstract, col. 2, lines 35 – 36).

31.   Regarding **claim 20**, Gulick did not teach the additional limitation as claimed. Nevertheless, D. Gulick teaches the operating system determines whether one or more active isochronous processes are ready to be executed on said electronic device by referencing an isochronous process list (abstract, col. 5, line 44 – col. 6, line 7, col. 12, lines 52 – 58, fig. 7).

It would have been obvious for one of an ordinary skill in the art, at the time the invention was made, to combine both references of Gulick so that isochronous tasks can be executed more reliable in a general-purpose operating system (D. Gulick, abstract, col. 2, lines 35 – 36).

32.   **Claims 45 – 48 and 50** are rejected on the same ground as stated above.

33.   Claims 21 - 23, 25 – 28, 30, 51 - 53, 55 – 58, and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gulick (US 6,624,743), as applied to claims 1 and 19 above, in view of Gulick (US 6,502,123, hereinafter D. Gulick), as applied to claim 20 above, and further in view of Doi (US 5,815,504).

34.   Regarding **claim 21**, Gulick teaches of an isochronous scheduler is invoked when one or

more isochronous processes are ready to be executed (abstract, col. 4, lines 6 – 39, col. 6, line 16

– col. 7, line 2, and figs. 6 – 7). Gulick did not teach the additional limitation as claimed.

        D. Gulick teaches of executing non-isochronous task if no additional isochronous tasks

are pending (col. 3, lines 37 – 44). Both references of Gulick did not teach about the

plesiochronous scheduler. Nevertheless, Doi teaches of identifying and processing the

plesiochronous signal when it is received (abstract, col. 1, lines 37 – 66).

        It would have been obvious for one of an ordinary skill in the art, at the time the

invention was made, to combine both teachings of Gulick to Doi's so that the system is capable

of processing a variety of different signals to enhance the system processing power.

35.   Regarding **claim 22**, Gulick did not teach the additional limitations as claimed.

Nevertheless, D. Gulick teaches the isochronous scheduler performs a selection procedure on the

active isochronous processes to produce a selected isochronous process based upon selection

factors that include one of a relative process importance, a process length, a process function,

and a process time-sensitive of said isochronous process (abstract, col. 11, line 40 – col. 12, line

9, fig. 7).

        It would have been obvious for one of an ordinary skill in the art, at the time the

invention was made, to combine both references of Gulick so that isochronous tasks can be

executed more reliable in a general-purpose operating system (D. Gulick, abstract, col. 2, lines 35 – 36).

36.   **Claims 23, 25 – 28, 30, 51 - 53, 55 – 58, and 60** are rejected on the same ground as stated above.

Allowable Subject Matter

37.   **Claims 24, 29, 54 and 59** would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

38.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6,510,163, Won disclosed of PDH network and ATM network. WO 98/54643, Ozcelik et al. disclosed performing the tasks that are associated with task flags. US 5,968,115, Trout and US Pat. Application Publication 2003/0140172, Woods et al. disclosed multitasking scheduling and execution system.

39.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lilian Vo whose telephone number is 703-305-7864. The examiner can normally be reached on Monday - Thursday, 7:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Meng-Ai An can be reached on 703-305-9678. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lilian Vo
Examiner
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April 1, 2004

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